

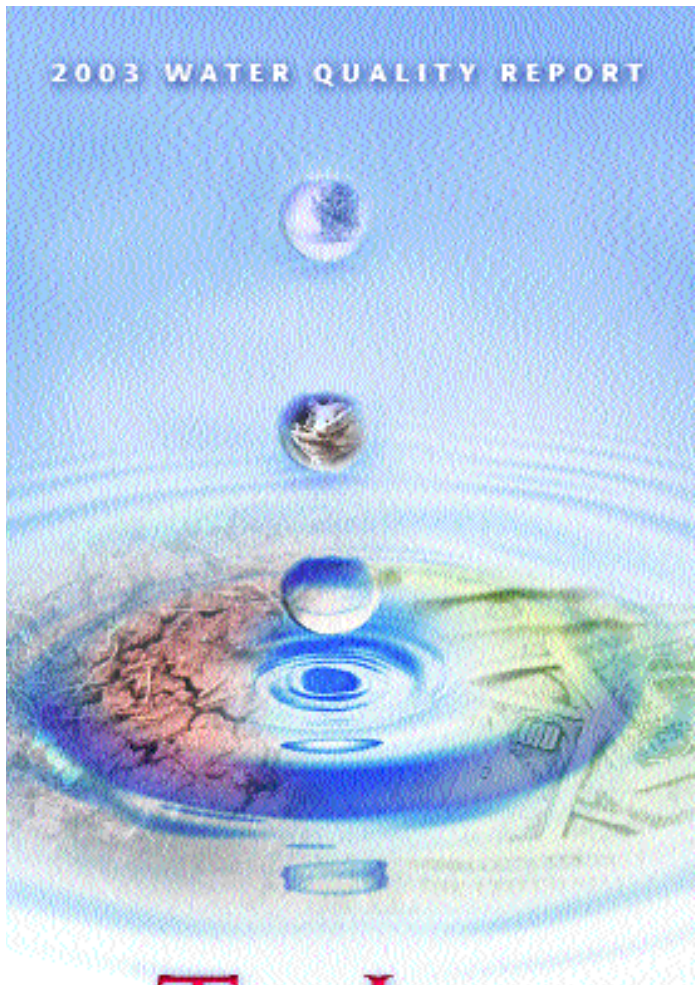
CITY OF DURHAM
DEPARTMENT OF
WATER MANAGEMENT
101 City Hall Plaza
Durham, NC 27701
www.durhamnc.gov



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Important
Drinking Water
Information

2003 WATER QUALITY REPORT

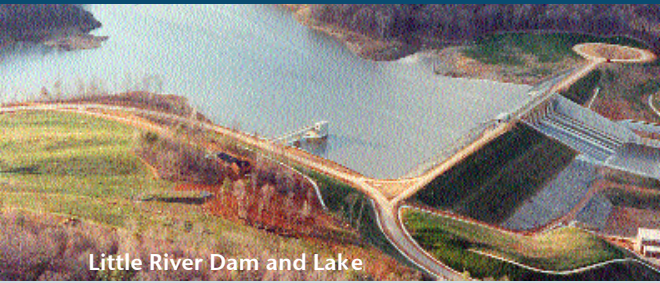


TAP INTO QUALITY

DURHAM



1869
CITY OF MEDICINE



Little River Dam and Lake

The Ripple Effect

This year's edition of **Tap in to Quality**, the City's Water Quality Report for 2003, chronicles the lingering effects of the drought of the century, several winter storms and a wet, cool summer. Over a 30-month period, this succession of atypical weather events heightened awareness of the importance and value of water. In conjunction with the general downward trend in the economy, these factors created a ripple effect of reduced water demand and decreased revenues.

On the following pages you will see a table showing that Durham's tap water had zero violations of any standards during the 2003 calendar year. The substances which were detected were all well below the levels allowed by the Environmental Protection Agency (EPA). The City is required to test for more than 100 different constituents in the drinking water, and the compounds listed in the tables represent just a fraction of the total number of required and voluntary analyses.

WATER DEMAND REMAINS LOW

The City of Durham, along with other water providers across the state and the southeast, has experienced a decrease in revenues due to the lingering drought effects and the wetter,

cooler summer of 2003. During 2003, the City's water system (PWS ID # 0332010) delivered an average of 25.8 million gallons of water per day (MGD) to over 183,000 people in Durham City and County. This is a 2 MGD decrease in demand from 2002, a year in which water restrictions were imposed for more than four months due to the historic drought.

WATER CONSERVATION ON THE RISE

Since the mid 1990s, Durham's water usage has decreased from 79 gallons per person per day (gpcd) to 66 gpcd – a 16% reduction. This is a real success story for conservation efforts through both public education and implementation and installation of water efficient methods and devices. National plumbing standards for water efficient showerheads and faucets and low-flush toilets were adopted in North Carolina in 1993, resulting in more indoor water efficiency. The increased use of water efficient products and devices, including energy and water efficient washers, dishwashers and water heaters, has helped Durham keep pace with growth without exerting undue stress on our water system.

Durham citizens have adopted lifestyle changes in water efficiency promoted by City staff during the drought. The City's partnership in the national **Water – Use it Wisely** campaign has fostered awareness that simple changes in daily habits *can* save water. Throughout the year, conservation program staff participate in community events where old, water-wasting showerheads can be exchanged for water efficient ones. These events include CenterFest, Durham Earth Day Festival and the Waste Less Fests held several times during the year. Each year, Durham school children participate in a poster contest after learning about the importance of having adequate, safe water to drink.

CITY CONTINUES WATER – USE IT WISELY! PARTNERSHIP

The City has continued its partnership with seven water providers throughout the state in this nationally recognized water conservation education campaign. The catch phrase "There are a number of ways to save water . . . and they all start with you!" has been used on TV ads and Public Service Announcements, promotional items and other communications tools. The campaign uses everyday items to demonstrate easy and innovative ways to save water.



TOP FIVE TIPS for wise water use:

- ☔ When adding or replacing shrubs or flowers, choose low water use plants and save up to 550 gallons each year.
- ☔ Direct downspouts and other runoff toward shrubs and trees or into a rain barrel.
- ☔ Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
- ☔ Time your shower to keep it under 5 minutes. You'll save up to 1000 gallons a month.
- ☔ Turn off the water while you shampoo and condition your hair and you can save more than 50 gallons a week.



Winners of the 2003 poster contest were invited to ride on the department's float in the Durham Holiday parade. Also aboard are "droplets" from EK Powe.

2003 POSTER CONTEST RESULTS:

THE WINNING ENTRIES FOR GRADES K - 2

THEME "WASTING WATER IS ALL WET!"

Guadalupe Orozco, 1st grade, EK Powe Elementary – First Place
Gerardo Cruz, 2nd grade, EK Powe Elementary – Second Place
Moises Garcia Vargas, 2nd grade, EK Powe Elementary – Third Place

WINNING ENTRIES FOR GRADES 3 – 5

THEME "RECLAIM YOUR WATER SOURCE"

Mercedes Cozart, 5th grade, CC Spaulding Elementary – First Place
David Mireles, 4th grade, EK Powe Elementary – Second Place
Alex Britt, 4th grade, Hillandale Elementary – Third Place

WINNING ENTRIES FOR GRADES 6 – 8

THEME "CREATIVE CONCEPTS IN WATER CONSERVATION"

Ju-Heung Kim, 6th grade, Shepard Middle School – First Place
Michele Hudgins, 6th grade, Shepard Middle School – Second Place
Kimberly Searles, 6th grade, Shepard Middle School – Third Place

SEVERAL LOCAL WINNERS ALSO PLACED IN THE STATEWIDE WATER CONSERVATION CONTEST. THEY WERE:

Gerardo Cruz, Second Place, Grades K – 2
David Mireles, First Place, Grades 3 – 5
Mercedes Cozart, Third Place, Grades 3 – 5
Ju-Heung Kim, First Place, Grades 6 – 8



Listen for dripping faucets and toilets that flush themselves. Fixing a leak can save 500 gallons each month.

WATER-SAVING DEVICE #89

ORGANIZATIONAL EFFICIENCY EFFORTS

Effective July 1, 2004, all of the divisions and programs with direct responsibility for providing water and sewer services will be consolidated into the newly formed Department of Water Management. This effort combines work groups and divisions from Environmental Resources, Finance and Public Works into a consolidated department under the same management. Everything from the supply lakes to the water reclamation facilities (including the pipes in between), plus the meter reading and billing operations, will be in one department. To our customers, this change should be seamless while ultimately providing more efficient and responsive delivery of services. Listed below are the operations/programs that are included in the Department of Water Management:

- | | |
|--|-----------------------------|
| ☂ Water Supply & Treatment | ☂ Sewer Rehabilitation |
| ☂ Water Reclamation (wastewater treatment) | ☂ Customer Billing Services |
| ☂ Plant Engineering & Maintenance | ☂ Industrial Pretreatment |
| ☂ Water & Sewer Maintenance | ☂ Laboratory Services |
| | ☂ Water Conservation |
| | ☂ Cross-connection Control |

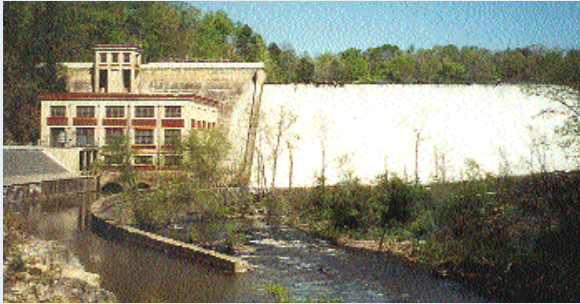
For the fiscal year 2004-05, there are no budget increases to support this organizational effort and any new positions will be filled through vacancies in other areas. The operating budget for the newly formed department ties the budgets for the above programs together. For more information on the Department of Water Management visit the City website at www.durhamnc.gov.

QUESTIONS REGARDING THE INFORMATION IN THIS REPORT

should be directed to staff at the Brown Water Treatment Plant at **560-4362**. For information on water conservation or to arrange a tour of facilities, call **560-4381**. Call **560-4411** for all billing questions. For additional information about City operations and services, contact the City's new call center - **Durham One Call** - at **560-1200**.

EN ESPAÑOL Este folleto tiene información importante acerca de la calidad del agua que provee la Ciudad de Durham. Si necesita mayor información acerca del contenido de este folleto el personal del Centro Hispano, 201 W. Main St. Suite 100, teléfono **687-4635**, puede ayudarlo.

Durham's Water Sources



Lake Michie Dam

The sources of drinking water - both tap and bottled - include rivers, lakes, streams, ponds, reservoirs, springs and wells. Durham is fortunate to have two high quality sources of raw (untreated) water. Lake Michie, built in 1926, has provided Durham with a reliable supply of approximately 19 million gallons per day (MGD) for over sixty years. Rapid development in the mid 1980s prompted the construction of the Little River Reservoir and Dam that was completed in 1988, providing an additional 18 MGD of water for a combined capacity of 37 MGD. In addition to having two water supplies, Durham also has two water treatment plants, the Williams Water Treatment Plant (located on Hillandale Road) and the Brown Water Treatment Plant (located on Infinity Road). Water can be transferred from the two supply lakes to the two treatment plants by gravity flow, hydropower or electric power. On-site terminal reservoirs at each of the water treatment plants hold a two to three day supply of raw water. In 2002, the City of Durham obtained an allocation of water from Jordan Lake of 10 million gallons per day. Future plans call for building a raw water intake at Jordan Lake but our current access is via the Town of Cary's water system. Additional water storage will be available in the Teer Quarry when environmental studies have been completed.

HOW IS DURHAM'S WATER TREATED?

Both the Williams Water Treatment Plant (built in 1927, current capacity of 22 MGD) and the Brown Water Treatment Plant (built in 1977, current capacity of 39 MGD) operate using

optimized conventional water treatment processes. At the water treatment facilities, raw water is mixed with lime to adjust the pH and alum to coagulate particles. After mixing, the water flows into settling basins where the particles clump together (coagulation) and become heavy and settle to the bottom of the basins (flocculation). After disinfection, the clearer water flows through filters, which remove the remaining particles. Fluoride is then added prior to distribution to our customers.

HOW DOES WATER TRAVEL?

As water travels over the surface of the land or through the ground, minerals and other materials are dissolved naturally. Water can also pick up substances that are the result of animal or human activity. Source water may contain microbial contaminants such as viruses and bacteria; inorganic contaminants such as salts and metals; pesticides and herbicides from agriculture or urban run-off; organic chemicals from industrial processes or run-off; and radioactive contaminants which can be naturally occurring.



Atrium of the Brown Water Treatment Plant

WHAT CAN YOU EXPECT OF DRINKING WATER?

In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration establishes regulations for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at

least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800-426-4791).

SPECIAL CONCERNS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial organisms are available from the **Safe Drinking Water Hotline (800-426-4791)**.

CRYPTOSPORIDIUM:

This microscopic organism can cause fever, diarrhea, and other gastrointestinal symptoms when ingested. *Cryptosporidium* occurs naturally in rivers and lakes and comes from animal wastes. Controlling and minimizing development and animal activities in our watershed reduces the occurrence of *Crypto* in raw water. The treatment combination of filtration, sedimentation and disinfection effectively eliminates *Crypto* from the drinking water. As part of the Information Collection Rule, Durham has monitored both supply lakes on a monthly basis since July of 1997. *Crypto* has **NEVER** been detected in Durham's treated drinking water.

City of Durham employees, including Pat Evans, Lab Analyst (right), take pride in delivering an adequate supply of clean, safe water to your tap. This requires dedicated teamwork from individuals and work-groups in several City departments.



WATER-SAVING DEVICE #15

Use a broom instead of a hose to clean your driveway or sidewalk and save up to 80 gallons of water every time.

COMMUNITY PARTICIPATION

How can you be involved in decisions regarding Durham's water system or other City issues? Citizens are welcome to attend regularly scheduled meetings of Durham's City Council. Council meetings are held the first and third Monday of each month at 7:00 p.m. in City Hall Council Chambers. Regular work sessions are also held so that City Council members can prepare for Council meetings. These sessions occur on Thursdays at 1:00 p.m. in the Council's Committee Room - two weeks prior to each regular business (Council) meeting. Check the City's website to confirm meetings at www.durhamnc.gov. City Hall is located in downtown Durham at 101 City Hall Plaza.

SURVEY SAYS...

Water Quality Report survey. Most respondents indicated that the information presented was clear and informative (99%); they did not have concerns about Durham's drinking water quality (60%) and had not had problems with taste, odor or clarity (84%). However 55% of the respondents commented that they did not know how to report problems such as water line breaks and sewer back-ups.

So – WHOM DO I CALL?

Durham customers will be happy to know that **Durham One Call (DOC)** will begin taking calls in late June. This centralized customer service center will serve as an intake and distribution center for citizen questions and concerns. Calls coming in to **DOC** will be handled directly by call takers or referred with "one call" to the responsible department or program. Using Durham One Call will increase efficiency and speed up the service request process. **So remember – Durham One Call...One Call Does It All...560-1200!**



HOW WATER & SEWER RATES ARE DETERMINED

Customers also indicated they would like more information on water and sewer rates. Durham's water and sewer fund is an enterprise fund; the rates you pay fund operations of water and sewer systems and the fund is self-sufficient. This includes the activities of

approximately 280 full time employees who operate the treatment plants (water and water reclamation), conduct sampling and lab analysis, read meters and process bills and inquiries, repair and maintain the collection and distribution system along with numerous support activities. Rates are reviewed annually as a part of the budget process and changes are made when the City's budget is approved. Durham's rates have remained relatively stable and are in the same range as like-sized water providers throughout the area.

Because Durham has held rates down over the last few years, needed maintenance and capital projects have been deferred. These issues must be addressed to ensure the ongoing ability to deliver a safe and adequate supply of drinking water to our customers while assuring effective treatment of wastewater before it is discharged into the environment. Durham's water and sewer rates have not kept up with inflation over the last 10 years. In fact, in today's dollars, water and sewer consumption charges are less expensive that they were in 1993. In order to keep up with federal and state water quality mandates and operational costs of the system, Durham water and sewer customers can expect an increase of approximately \$4.00 per month for FY 2004-05.

For more information on the City's wastewater collection system, treatment processes and the water reclamation facilities, visit the website at **www.durhamnc.gov** or call **560-4381** to request a copy of the annual sewer system report.



▶ HOW DO WE MEASURE UP?

Please circle your choice and feel free to write specific comments for each question listed below. To thank customers for their participation in this survey, all surveys returned by July 30 will be entered in a drawing for four tickets to a Durham Bulls baseball game.

- 1) Is the information in this water quality report clear and informative? YES NO
- 2) Do you have concerns about the quality of your drinking water? YES NO
- 3) Have you had any problems with the taste, odor or clarity of your drinking water? YES NO
 - A) Was the issue resolved to your satisfaction? YES NO
 - B) Did you have difficulty reporting problems with your water quality? YES NO
- 4) Have you had to call Customer Service about any billing problem? YES NO
 - A) If yes, is this a recurring problem? YES NO
 - B) Was the problem resolved to your satisfaction? YES NO
- 5) Have you had any problems with unplanned service interruptions or adequate pressure? YES NO
- 6) Do you know how to report water line breaks or sewer back-ups? YES NO
- 7) Please rate City water and sewer utility staff on

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WWW.DURHAMNC.GOV/DEPARTMENTS/ENVIRON/QUALITYSURVEY.CFM

a scale of 1 (least satisfactory) to 5 (most satisfactory) for the following criteria.

Polite____ Prompt____ Knowledgeable____

- 8) What additional information would you like to see included in this report? Also, please include any additional comments related to your water and sewer services.

- 9) Please rate the quality of water and sewer service on a scale of 1 (poor) to 5 (excellent) _____
- 10) Please rate the value of water and sewer services on a scale of 1 (overpriced) to 5 (affordable) _____

Thank you for taking the time to complete this survey. Please fill out the following information to win four tickets to a Durham Bulls baseball game.

Name: _____

Day Phone: (____) _____

Mailing Address: _____

PLEASE COMPLETE AND RETURN TO:

City of Durham Water Management
101 City Hall Plaza • Durham, NC 27701

DO NOT include the response with your water bill payment.

2003 Water Quality Summary					
Substance & Unit of Measurement	Max. Level Detected and Range	Max. Level Allowed MCL	Ideal Goal (MCLG)	Potential Source(s) of Substance	Reason(s) for Regulating Substance
Regulated at the Treatment Plants					
Fluoride mg/L	1.03 (0.87 - 1.03)	4.0	4.0	Naturally occurring mineral; also added to promote dental health	Some people who drink water containing fluoride in excess of the MCL over many years may get bone disease. Children may get mottled teeth.
Nitrate mg/L (as Nitrogen)	0.34 (< 0.10 - 0.34)	10.0	10.0	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Turbidity NTU	0.10 (0.05 - 0.10)	TT	N/A	Soil runoff	Turbidity has no health effect; however, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms.
Alpha emitters pCi/L*	None Detected	15	0	Emission of alpha radiation as a result of the erosion of natural deposits	Some people who drink water with alpha emitters in excess of the MCL over many years may have an increased risk of cancer.
Beta/photon emitters pCi/L*	None Detected	50	0	Emission of photons and beta radiation as a result of the decay of natural and man-made deposits	Some people who drink water with beta/photon emitters in excess of the MCL over many years may have an increased risk of cancer.
Regulated at the Customer's Tap					
Copper mg/L **	0.10 (90th percentile)	AL=1.3	1.3	Corrosion of household plumbing systems None of the targeted 103 sampling sites exceeded the Action Level	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Long term exposure can cause liver or kidney damage.
Lead µg/L **	ND < 5 (90th percentile)	AL=15	0	Corrosion of household plumbing systems 2 out of 103 targeted sampling sites exceeded the Action Level	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Adults who drink this water over many years could develop kidney problems or high blood pressure.
Regulated in the Distribution System					
Chloramines mg/L (as Cl ₂)	2.9 RAA Running Annual Average	MRDL 4.0	MRDLG 4.0	Water additive to control microbes	Some people who use water containing chloramines well in excess of the MRDL may experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL may experience stomach discomfort or anemia.
Total Coliform Bacteria (as a percent)	0% positive	< 5% positive	0% positive	Human and animal fecal waste; indigenous sources such as vegetation; bacterial regrowth	Coliforms are used as an indicator that other, potentially-harmful bacteria may be present.
Five Haloacetic Acids (5HAA) µg/L	57.8-System average (35 - 108)	60	0	By-product of drinking water disinfection	Some people who drink water containing HAAs in excess of the MCL over many years may have an increased risk of cancer.
Total Trihalomethanes (TTHM) µg/L	62.4-System average (25 - 129)	80	0	By-product of drinking water disinfection	Some people who drink water with TTHMs in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of cancer.
Unregulated Substances					
Chlorodibromomethane µg/L	1.0 (< 1.0 - 1.0)	NR	NR	Component of TTHMs	NOTE: Some people who drink water with TTHMs in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of cancer.
Chloroform µg/L	116 (19 - 116)	NR	NR	Component of TTHMs	
Bromodichloromethane µg/L	13.0 (4 - 13)	NR	NR	Component of TTHMs	
Monochloro-acetic Acid µg/L	7.0 (<2.0 - 7.0)	NR	NR	Component of 5HAAs	NOTE: Some people who drink water containing HAAs in excess of the MCL over many years may have an increased risk of cancer.
Dichloro-acetic Acid µg/L	49.0 (16 - 49)	NR	NR	Component of 5HAAs	
Trichloro-acetic Acid µg/L	53.0 (15 - 53)	NR	NR	Component of 5HAAs	
Dibromo-acetic Acid µg/L	2.1 (<1.0 - 2.1)	NR	NR	Component of 5HAAs	
Sodium mg/L	25.9 (14.2 - 25.9)	NR	20 [Proposed]	Naturally occurring element in soil and water	Sodium is an essential nutrient, however, consuming high levels of sodium can contribute to high blood pressure.
Sulfate mg/L	24 (13 - 24)	NR	250	Naturally occurring mineral in soil	Sulfate may have a laxative effect for some people who drink water containing high levels of sulfate.
Total Organic Carbon (TOC) mg/L Results show the range of TOC in both source and treated water. Durham's processes remove more the required 50%.	Average Removal 64% Source 11.5 (6.4 - 11.5) Treated 4.1 (2.1 - 4.1)	NR	TT 50% removal	Naturally present in the environment	Total organic carbon (TOC) has no health effect; however, TOC provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of cancer.
*Samples were collected and analyzed October 2003 **EPA requires sampling every three years. Sampling & analysis conducted September 2001.					

▲ PHYSICAL AND MINERAL CHARACTERISTICS		▲ KEY TO ABBREVIATIONS IN TABLE	
SUBSTANCE, UNIT OF MEASUREMENT	ANNUAL AVERAGE	mg/L	milligrams per liter, or parts per million
pH, standard units - range	7.1 – 8.2	MCL	Maximum Contaminant Level; the highest level of a contaminant that is allowed in drinking water.
Alkalinity, mg/L	23	MCLG	Maximum Contaminant Level Goal; the level of a contaminant in drinking water below which there is no known or expected risk to health.
Aluminum, mg/L	< 0.03		
Calcium, mg/L	4.6		
Chloride, mg/L	18.7	MRDL	Maximum Residual Disinfectant Level; the highest level of a disinfectant allowed in drinking water.
Conductivity, micromhos/cm	156		
Hardness - Calculated, mg/L	22	MRDLG	Maximum Residual Disinfectant Level Goal; the level of a drinking water disinfectant below which there is no known or expected risk to health.
Hardness - EDTA, mg/L	22		
Orthophosphate, mg/L (as phosphorus)	0.32	AL	Action Level; the concentration of a contaminant that triggers treatment or other requirements that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.
Potassium, mg/L	1.8		
Total Solids, mg/L	93		
Zinc, mg/L	0.30	TT	Treatment Technique; a required process intended to reduce the level of a contaminant in drinking water
		µg/L	micrograms per liter, or parts per billion
		pCi/L	Picocuries per liter is a measure of the radioactivity in water.
		NTU	Nephelometric Turbidity Units; measures the cloudiness in water